

AUTOMATIC IDENTIFICATION AND MONITORING SYSTEM FOR FISHERMAN BASED ON NARROWBAND AND INTERNET OF THINGS COMMUNICATIONS SYSTEMS

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Abstract:

In recent days we can hear many issues faced by Tamil Nadu fishermen. So that we propose a system which will notify the information of where the devices are being located to the border security forces and alert while they were near to the border. The application will send the alert message to the relatives. And also fishermen can identify the location of the neighboring boats. This system can act as an incident management application to avoid conflicts at varying situations. The automatic alarming system is going to be provided along with this device which alerts in case any sort of issues. This is devised in such a way that the application can be easily been utilized by all the people in the surroundings. The application operates based on smart engine and SMS alert system. This provides ease to operate even for illiterate people.

Introduction

Today one of the major issue for Tamil Nadu fisherman is being caught by the Sri Lankan Navy. From Tamil Nadu about 18,000 boats of different kinds conduct fishing around the India-Sri Lanka maritime border. But by accidentally crossing the border without knowledge, fishermen are being imprisoned and sometimes they get shot by the Sri Lankan navy. So their families are greatly affected and this leads to loss in the both humans as well as their economic incomes. The main reason for this problem is that the fishermen are unaware of crossing the border. To solve such problems and saves the lives of the fishermen we have developed a system to provide security.

Literature Survey

Intelligent Boundary Alert System Using GPS

In this paper, An Intelligent Boundary Alert System (IBAS) is proposed. This system helps the fishermen in maritime navigation. The system uses a GPS which continuously receiving signals from the satellite and provide the current position of the boat based on the latitude and longitude data.

Implementation of GPS Based Security System for Safe Navigation Of Fisherman Auto Boat

This system also uses GPS technology for navigation and vessel tracking purposes. Using microcontroller, the stored border data between India and Sri Lanka is being compared with the current location details of the boat, and then alarm signal is being generated when the vessels crosses the border.

Implementation Of GPS Based Surveillance Navigation System For Fisherman

This paper aims at surveillance system for fishermen from preventing them from border crossing. With the help of GPS the current position of boats/vessels with latitude and longitude data is continuously being extracted.

Implementation of Maritime Border Alert System

This paper proposed to help the small scale fishermen for safe navigation in maritime and then preventing them from entering other country border line. The controlling unit will make decision in order to alert the fishermen and coast guards.

Drawbacks in the existing system

At present there are many proposed systems which help to identify the current location for the vessel. The systems are GPS and radar based which were run over by coastal guards. Other systems include such as the android application, WSN based (RSSI). But the above systems are not possible due to its short range, high cost, time efficiency, etc. The major drawback of this existing system is that they never provided a accurate way to control the speed of the outboard motor which is used by our common fishermen. All these defects are overcome in our proposed works.

Proposed System

The proposed system is used to denote the boundary to the fishermen and to stop the boats from trespassing into the border. It is done by GPS which receives a signal from the satellite and gives the current position of the boat. The arm processor is programmed to compare the current longitudes and longitudes with the stored longitudes and longitudes of the border. Each boat has a unique number through which a record of how many boats is monitored in the control station. Thus guards in the shore can reach out the fishermen quickly. Our system provides an indication to both the fisherman and to the coastal guard. Thus this system alerts the fishermen and the coast guard about the position of the boat. Further attempts of crossing the border neglecting the alert can be prevented by controlling the engine through the engine control unit. A alert message is sent to the relatives when they cross the border. Using the application the fishermen can identify the neighboring boats location.

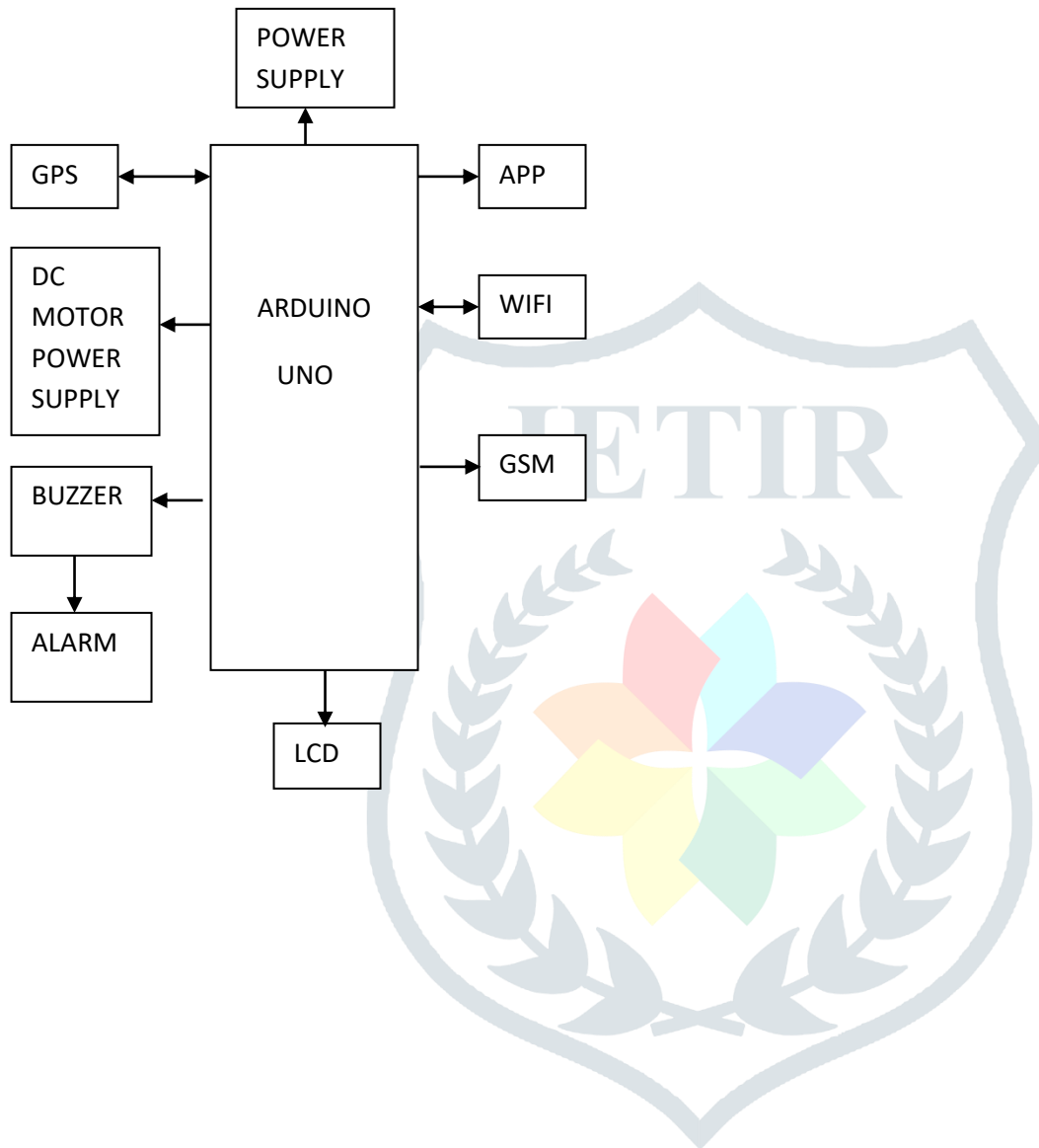
Working Principle

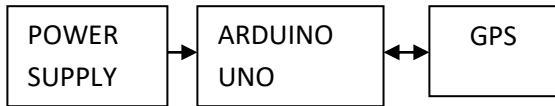
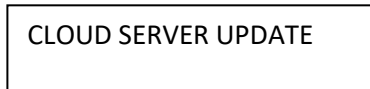
The GPS device will frequently give the signal which determines the latitude and longitude and indicates the position of the boat and it is displayed in the LCD. The hardware which interfaces with microcontroller, LCD display, GSM modem and GPS Receiver. GPS provides consistent positioning, navigation, and timing services to users on a continuous basis in every day and night. GPS store the storage of the maritime position. While comparing the previous maritime restricted position and current position and result will be the latitude and longitudinal degree of the boat's location is determined If the boat nearer to the restricted zone ,automatically warning message will be send to the LCD display which is in boat. The warning message are send by using a GSM Modem. Then the fishermen fails to ignore the warning and they move to reach the restricted zone automatically engine gets off by means of relay and send through the message to the coastal guard. A microcontroller is interfaced serially to a GSM modem and GPS receiver and part of seas as towers cannot be placed in middle of the ocean so it place in coastal control office. Thus he coastal continuously receive the GPS information from the GPS Address. The main aim of this GSM system is to ensure continuous monitoring of each boat and information given to the coastal office. When boat crosses border, the

stored message adjacent to with compared position and message sent to the desired authority person by using GSM module.

BLOCK DIAGRAM

SECTION 1: BOAT



SECTION 2: IoT**SECTION 3: ADMIN / IOT****Module Description****GPS Receiver:**

A Global Positioning System (GPS) receiver continuously receives the signal from the satellites through the antenna. It contains information regarding time (GMT), latitude, longitude, altitude, etc. This information is in the standard NMEA protocol and data format. This data will be in RS232 protocol, whereas the microcontroller supports TTL logic, therefore MAX232 is used, which acts as a protocol converter.

GSM:

Global System for Mobile communication (GSM) is used to add an SMS alert facility to the system. If the boat tends to move closer to the border, an SMS is sent to the control room to alert.

Microcontroller:

Microcontroller receives the data from the GPS module through MAX232. This data which contains latitude and longitude values will be compared with the predefined latitude and longitude values. The threshold values are divided as normal and warning zone. Based on the comparison, further action is taken

LCD:

The latitude and longitude values are continuously displayed on a 16X2 LCD that indicates a normal zone and warning zone.

Motor:

In the normal zone, the motor will be running at regular speed. If the boat is in the warning zone, the speed of the motor is reduced through PWM technology and the direction of the boat can be changed mechanically or through programming

Buzzer:

If the boat is in the normal zone, the buzzer will not be functioning. If the boat is in the warning zone, the buzzer will alert the fishermen.

Power Supply

In this, 9V rechargeable battery used for power supply. It provides the necessary voltage to the microcontroller unit.

Arduino (Microcontroller)

Arduino UNO is microcontroller based on the ATmega328. It has 14 digital input/output pins, 6 analog, 1.6MHz digital oscillator, a USB connection, a power jack, an ICSP header and a reset button. The UNO differs from all preceding boards in that it does not use the FTDI USB to serial driver chip. Instead, it features the ATmega801 programmed as a USB to serial converter. [3] Fig (3) represents the Arduino Uno model used in this system.

Conclusion

This Project generates alarm which will not allow the fishermen to cross the border by mistake. With the simple circuitry and the use of sensors (low cost sensors) makes the module a low cost product, which can be purchased even by a poor fisherman. This system provides high accuracy and high precision values of the latitude and longitude. The process of routing the fishermen will be more efficient with the help of this system.

References

- [1] Automatic Border Alert System for Fishermen using GPS and GSM Techniques S. Ranjith*, Shreyas, K. Pradeep Kumar, R. Karthik Indonesian Journal of Electrical Engineering and Computer Science Copyright © 2017 Institute of Advanced Engineering and Science. All rights reserved.
- [2] BORDER ALERTING SYSTEM FOR FISHERMEN USING GPS MODULE Sindhu S Rao1, Saraswathi Devi V G2, Lokesh B S3 International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056 Volume: 04 Issue: 06 | June -2017
- [3] NAVIGATION ALERT SYSTEM FOR FISHERMEN WITH SOLAR POWER HARVESTING International Journal of Innovative Research in Advanced Engineering (IJIRAE) ISSN: 2349-2163 Issue 03, Volume 4 (March 2017)
- [4] IMPLEMENTATION OF GPS AND RF ASSISTED SYSTEM FOR SECURE NAVIGATION OF FISHERMEN Conference: International Conference on Advance Research in Technology and Engineering (ICARTE '15), At Sri Ranganathar Institute of Engineering and Technology, Athipalayam, Coimbatore
- [5] C. Sheeba thangapushpam "Intelligent boundary alert system using GPS" IOSR Journal of Computer Engineering (IOSR-JCE) e-ISSN: 2278-0661, ISSN: 2278-8727 PP 19-23 A Review on GPS Tracking and Border Alert System for Fishermen (IJSTE/ Volume 2 / Issue 5 / 001) All rights reserved by www.ijste.org.